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ABSTRACT

Five preschool-age boys participated in a study of the effects of detailed and nondetailed toys on solitary creative play. In contrast to detailed, high-structure toys, nondetailed, low-structure toys were hypothesized to enhance creative play. In a multi-element design taking place over 13 daily sessions, detailed and nondetailed toys were introduced successively into a laboratory play setting, each for a 4-minute period. Occurrence of creative play, idealized play, the absence of play, detailed and general toy examination, tactual contact, laughter, verbalization, activity level, and destruction were recorded by two trained observers. Subjects' preferences for the toys were assessed at the end of each session by having their parents complete a questionnaire concerning their children's play preferences. Results showed that (1) nondetailed toys promoted more creative play than did detailed toys, and (2) detailed toys promoted more noncreative play than did nondetailed toys. Noncreative play, however, predominated overall. Detailed and general toy examination, as well as verbalization and destructiveness, increased across sessions. Children showed a strong preference, corroborated by parent reports, for detailed, noncreative toys. Discussion focused on the unanticipated results of toy examination and on a behavioral analysis of creative play. (MP)

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EFFECTS OF CREATIVE AND IDEALIZED TOYS
ON CHILDREN'S PLAY

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ABSTRACT

FIVE PRESCHOOL-AGED BOYS PARTICIPATED IN A STUDY ON THE EFFECTS OF REALISTIC, DETAILED AND NON-DETAILED TOYS ON SOLITARY CREATIVE PLAY. NON-DETAILED, LOW STRUCTURE TOYS WERE HYPOTHESIZED TO ENHANCE CREATIVE PLAY IN CONTRAST TO DETAILED, HIGH STRUCTURED TOYS. DETAILED AND NON-DETAILED TOYS WERE INTRODUCED SUCCESSIVELY INTO A LABORATORY PLAY SETTING FOR ONE 4-MIN PERIOD APIECE OVER 13 DAILY SESSIONS IN A MULTI-ELEMENT DESIGN. OBSERVER AGREEMENT ON THE OCCURRENCE OF CREATIVE PLAY, IDEALIZED PLAY, NO-PLAY, DETAILED AND GENERAL TOY EXAMINATION, TACTUAL CONTACT, LAUGHTER, VERBALIZATION, ACTIVITY LEVEL, AND DESTRUCTION WAS 92.8% (77.9 - 100%). THE CHILDREN'S PREFERENCES FOR THE TOYS WERE ASSESSED AT THE END OF EACH SESSION; THEIR PARENTS COMPLETED A QUESTIONNAIRE ON THEIR CHILDREN'S PLAY PREFERENCES. RESULTS SHOWED THAT NON-DETAILED TOYS PROMOTED MORE CREATIVE PLAY THAN DETAILED TOYS AND THAT DETAILED TOYS PROMOTED MORE NON-CREATIVE PLAY THAN NON-DETAILED TOYS. NON-CREATIVE PLAY, HOWEVER, PREDOMINATED. NO OTHER MAIN EFFECTS WERE FOUND. DETAILED AND GENERAL TOY EXAMINATION, AS WELL AS VERBALIZATION AND DESTRUCTIVENESS, INCREASED ACROSS SESSIONS. CHILDREN SHOWED A STRONG PREFERENCE FOR DETAILED NON-CREATIVE TOYS; THIS WAS CORROBORATED BY PARENT REPORTS. DISCUSSION FOCUSED ON THE SEEMINGLY CONTRARY RESULTS OF TOY EXAMINATION AND A BEHAVIORAL ANALYSIS OF CREATIVE PLAY. THAT ANALYSIS FOCUSED ON THE MULTIPLE STIMULUS AND RESPONSE FUNCTIONS THAT CAN OCCUR FOR TOYS AND PLAY, RESPECTIVELY. THE AMOUNT AND TYPE OF TOY DETAIL INFLUENCES THE RANGE OF STIMULUS FUNCTIONS THE TOY WILL ENTER WITH RESPECT TO THE CHILD'S RESPONSE FUNCTIONS. LESS DETAIL PROMOTES A WIDER RANGE OF RESPONSE FUNCTIONS, HENCE THE MORE LIKELY PLAY WILL BE CALLED "CREATIVE."

INTRODUCTION

ONE OF THE QUALITIES OF TOYS THAT HAS BEEN VIEWED AS A DETERMINANT OF CREATIVE PLAY IS THE AMOUNT OF A TOY'S DETAIL OR STRUCTURE. NON-DETAILED AND LOW STRUCTURED TOYS ARE THOUGHT TO PROMOTE CREATIVE PLAY, WHILE TOYS HIGH IN DETAIL OR STRUCTURE ARE THOUGHT TO HINDER CREATIVE PLAY. IN PAST RESEARCH, CREATIVE PLAY HAS BEEN CONFOUNDED WITH PRETEND PLAY, AND TOY DETAIL AND STRUCTURE HAS BEEN CONFOUNDED WITH REALISTIC (E.G., TOY CARS) VS NON-REALISTIC TOYS (E.G., TIN CANS). SUCH CONFOUNDING HAS PRODUCED INCONSISTENT RESULTS. THE PURPOSE OF THE PRESENT STUDY WAS TO EXAMINE THE SOLITARY CREATIVE PLAY (NOT PRETEND PLAY) OF PRESCHOOL-AGED BOYS AS THEY INTERACTED WITH REALISTIC, DETAILED AND NON-DETAILED TOYS. SOLITARY PLAY WAS EXAMINED, AS OPPOSED TO GROUP PLAY, BECAUSE CHILDREN ENGAGE IN SOLITARY PLAY ON A FREQUENT BASIS, YET LITTLE IS KNOWN ABOUT ITS CHARACTERISTICS. MOREOVER, TOYS ARE OFTEN PURCHASED BY PARENTS FOR THE SOLITARY PLAY OF THEIR CHILDREN, HENCE TOYS NEED TO BE EXAMINED FOR THEIR EFFECTS ON SUCH PLAY.

STUDIES ON CREATIVE PLAY TYPICALLY EXTEND OVER ONLY A SINGLE SESSION, THEREBY PROVIDING LITTLE INFORMATION ABOUT HOW CHILDREN INTERACT WITH TOYS ON A REGULAR BASIS OVER TIME. THUS, IN THE PRESENT STUDY, A MULTI-ELEMENT OR MULTIPLE SCHEDULE DESIGN WITH REPEATED AND COUNTER-BALANCED MEASUREMENT ACROSS SESSIONS WAS USED TO ASCERTAIN THE PATTERN AND STABILITY OF THE CHILDREN'S PLAY. PREFERENCE PROBES WERE CONDUCTED AT THE END OF EACH SESSION TO DETERMINE EACH CHILD'S TOY PREFERENCE; THE CHILDREN'S PARENTS FILLED OUT QUESTIONNAIRES CONCERNING THESE PREFERENCES.

METHOD

FIVE NORMAL PRESCHOOL BOYS PARTICIPATED IN THE STUDY. THEIR MEAN AGE WAS 4 YRS-7 MOS. THE STUDY WAS CONDUCTED IN A 1.8 X 2.4 M EXPERIMENTAL ROOM WHICH HAD A ONE-WAY OBSERVATION WINDOW ON ONE WALL. THE PLAY MATERIALS CONSISTED OF TWO CORRESPONDING SETS OF TOYS, FIVE TOYS IN EACH SET, CATEGORIZED AS DETAILED AND NON-DETAILED. DETAILED TOYS WERE SELECTED FOR THEIR COMPLEXITY IN DESIGN AND COLOR, AND SPECIFICITY OF FUNCTION. NON-DETAILED TOYS WERE SELECTED FOR THEIR SIMPLICITY IN DESIGN AND COLOR, AND NON-SPECIFICITY OF FUNCTION (SEE PHOTOGRAPHS).

CORRESPONDING SUBSETS OF THREE TOYS FROM EACH SET WERE INTRODUCED SEPARATELY INTO THE PLAY SETTING ONCE THE CHILDREN WERE ACCUSTOMED TO STAYING IN THE ROOM ALONE. THIRTEEN DAILY 8-MIN SESSIONS WERE CONDUCTED IN WHICH THE CHILDREN PLAYED WITH EACH SET ONCE A SESSION FOR 4-MIN, COUNTER-BALANCED ACROSS SESSIONS IN A MULTI-ELEMENT/MULTIPLE SCHEDULE DESIGN. AT THE END OF EACH SESSION'S SECOND PERIOD, THE CHILDREN WERE ASKED TO SELECT BETWEEN THE TWO SETS OF TOYS AND ALLOWED TO PLAY WITH THE SELECTED SET FOR ANOTHER MINUTE. THE CHILDREN'S PARENTS FILLED OUT FORMS REPORTING THEIR CHILDREN'S TOY PREFERENCES.

RECORDING OF CREATIVE AND NON-CREATIVE PLAY, AS WELL AS NO-ACTIVITY, DETAILED EXAMINATION, GENERAL EXAMINATION, TACTUAL CONTACT, VERBALIZATION, LAUGHTER, AND DESTRUCTION (SEE TABLE 1) WAS CARRIED OUT SIMULTANEOUSLY AND INDEPENDENTLY BY TWO TRAINED OBSERVERS. INTER-OBSERVER AGREEMENT WAS CALCULATED USING AN OVERALL OCCURRENCE/NON-OCCURRENCE AGREEMENT INDEX. OVERALL AGREEMENT PERCENTAGES FOR INTERACTIONS WITH THE DETAILED AND NON-DETAILED TOYS WERE 93.5% (77.9% - 100%) AND 92.0% (85.1 - 99.4%), RESPECTIVELY.

RESULTS

OVERALL, NON-CREATIVE PLAY PREDOMINATED [$F(1,4) = 681.97$, $p < .0001$] AND BECAME MORE DOMINANT ACROSS SESSIONS [$F(12,48) = 2.29$, $p < .05$]. MORE CENTRAL TO THE PURPOSES OF THE PRESENT STUDY WAS THE SIGNIFICANT PLAY BEHAVIOR-BY-TOY CATEGORY INTERACTION [$F(1,4) = 19.80$, $p < .05$], SHOWING THAT NON-DETAILED TOYS PROMOTED MORE CREATIVE PLAY THAN DID DETAILED TOYS AND, CONVERSELY, THAT DETAILED TOYS PROMOTED MORE NON-CREATIVE PLAY THAN DID NON-DETAILED TOYS.

ALTHOUGH THE INTERACTION BETWEEN PLAY BEHAVIOR AND TOY CATEGORY DID NOT CHANGE SIGNIFICANTLY ACROSS SESSIONS, IT DID BETWEEN THE FIRST AND SECOND HALVES OF THE STUDY (SESSIONS 1-6 AND 8-13) [$F(1,4) = 227.68$, $p < .0005$]. FOLLOW-UP F TESTS REVEALED A SIGNIFICANT CONDITION-BY-HALF INTERACTION FOR BOTH CREATIVE AND NON-CREATIVE PLAY [$F(1,4) = 7.84$, $p < .05$; $F(1,4) = 342.57$, $p < .001$] (SEE TABLE 2).

GENERAL AND DETAILED EXAMINATION INCREASED SIGNIFICANTLY ACROSS SESSIONS, BOTH TOGETHER [$F(12,48) = 7.89$, $p < .0001$] AND INDIVIDUALLY [$F(12,48) = 4.40$, $p < .0005$]; $F(12,48) = 4.24$, $p < .0005$], AND BY HALVES [$F(1,4) = 18.79$, $p < .05$; $F(1,4) = 33.41$, $p < .005$]. A CONDITION EFFECT WAS FOUND FOR OVERALL EXAMINATION [$F(1,4) = 14.38$, $p < .05$], REFLECTING GREATER EXAMINATION FOR DETAILED TOYS. VERBALIZATIONS INCREASED ACROSS SESSIONS [$F(12,48) = 2.81$, $p < .05$] AND DESTRUCTION ACROSS THE FIRST AND SECOND HALVES OF THE STUDY [$F(1,4) = 17.35$, $p < .05$].

ON THE PREFERENCE PROBES, THE CHILDREN CHOSE THE DETAILED TOYS OVER THE NON-DETAILED TOYS ON 58 OF THE 65 (89.2%) TRIALS. THE PARENT REPORTS CORROBORATED THIS PREFERENCE.

DISCUSSION

THE RESULTS SHOWED THAT PRESCHOOL BOYS ENGAGED IN SUBSTANTIALLY MORE NON-CREATIVE THAN CREATIVE PLAY WHETHER THEY WERE PRESENTED WITH DETAILED OR NON-DETAILED TOYS. NONETHELESS, THEY PLAYED MORE CREATIVELY WITH NON-DETAILED, LOW-STRUCTURE TOYS THAN WITH DETAILED, STRUCTURED TOYS, AND ENGAGED IN MORE NON-CREATIVE PLAY WITH DETAILED, STRUCTURED TOYS THAN WITH NON-DETAILED, LOW-STRUCTURE TOYS. THE CHILDREN PREFERRED TO PLAY WITH THE DETAILED, NON-CREATIVE TOYS; THIS WAS CORROBORATED BY THE PARENT QUESTIONNAIRE. NOT ONLY DID NON-CREATIVE PLAY PREDOMINATE, IT ALSO INCREASED ACROSS SESSIONS FOR BOTH TYPES OF TOYS. CREATIVE PLAY DECREASED SIGNIFICANTLY ACROSS HALVES OF THE STUDY WITH NON-DETAILED TOYS; IT DID NOT CHANGE WITH DETAILED TOYS. CREATIVE PLAY, THEN, WAS RELATIVELY TRANSIENT UNDER THE PRESENT CONDITIONS. THESE RESULTS CONFIRM, IN PART, NOTIONS ABOUT THE EFFECTS OF CREATIVE TOYS ON CREATIVE PLAY, YET AT THE SAME TIME SHOW THE FRAGILITY OF THE EFFECT. THE POPULAR ASSUMPTION ABOUT SUCH TOYS, THEN, IS SUPPORTED, BUT ONLY WEAKLY.

SIGNIFICANT INCREASES IN GENERAL AND DETAILED EXAMINATION ACROSS SESSIONS WERE OBSERVED. THIS EFFECT WOULD NOT BE EXPECTED ON THE BASIS OF PREVIOUS RESEARCH -- EXAMINATION TYPICALLY DECREASES OVER TIME. OUR EXPLANATION FOR THE INCREASE IS THAT THE CHILDREN SPENT MORE TIME PLAYING WITH THE TOYS AND EXAMINING THE EXPERIMENTAL ROOM IN THE EARLIER SESSIONS, WHILE THEY EXAMINED THE ROOM CONSIDERABLY LESS IN THE LATER SESSIONS. AS THE VARIABLES CONTROLLING ROOM EXAMINATION CEASED TO EXERT CONTROL, TOY EXAMINATION, WITH WHICH IT WAS INCOMPATIBLE, INCREASED.

THE PRESENT RESULTS SUPPORT A BEHAVIORAL ANALYSIS THAT TOYS THAT ARE DETAILED IN DESIGN AS TO THEIR FUNCTION ARE MORE LIKELY TO EXERT STIMULUS CONTROL OVER A NARROWER RANGE OF PLAY THAN ARE TOYS THAT ARE NON-DETAILED. IT IS IMPORTANT TO POINT OUT, HERE, THAT REALISTIC, DETAILED TOYS DO NOT JUST HAVE MORE DETAIL THAN NON-DETAILED TOYS, BUT THAT EACH COMPONENT OF DETAIL IS RELATED TO THE OVERALL STIMULUS FUNCTION OF THE TOY. AS SUCH, THESE DETAILS (E.G., LIGHTS, SIRENS, RED CROSSES) OPERATE IN COORDINATED MULTIPLE CONTROL TO OVERDETERMINE A TYPICAL (NON-CREATIVE) RESPONSE FUNCTION (E.G., PLAYING AMBULANCE). NON-DETAILED OR CREATIVE TOYS, IN CONTRAST, EXERT LESS COORDINATED MULTIPLE CONTROL BECAUSE THEY LACK BOTH DETAIL AND COORDINATED DETAIL, THEREBY EXERTING CONTROL OVER LESS USUAL (CREATIVE) AND SUBSTITUTED RESPONSE FUNCTIONS.

ONE MEANS OF EXAMINING THESE POINTS ABOUT TOY DETAIL WOULD BE TO BEGIN WITH SETS OF DETAILED TOYS IN BOTH EXPERIMENTAL CONDITIONS, BUT TO REMOVE THE DETAIL FROM ONE SET EITHER BEFOREHAND OR SYSTEMATICALLY ACROSS SESSIONS. CONVERSELY, NON-DETAILED TOYS COULD BE PROVIDED WITH DETAIL. A FURTHER MANIPULATION IN EITHER CASE WOULD BE TO MAKE THIS DETAIL COORDINATED OR UNCOORDINATED WITH A PARTICULAR TOY FUNCTION (E.G., A VEHICLE WITH AN AMBULANCE BODY, RACE CAR TIRES, AND BULLDOZER SHOVEL). SUCH CONDITIONS WOULD ALLOW A FULLER AND MORE COMPLETE ANALYSIS OF THE CONDITIONS THAT FACILITATE OR INHIBIT CREATIVE PLAY.

TABLE 1
DEFINITIONS AND INSTRUCTIONS FOR OBSERVERS

PLAY I (CREATIVE PLAY)	CHECK IF THE CHILD IS IN PHYSICAL CONTACT WITH THE TOY AND EXHIBITING BEHAVIOR THAT IS NOT STIMULUS DOMINATED. INSTEAD, BEHAVIORS ARE SCORED THAT APPEAR TO RESULT FROM A LACK OF CONSTRAINING STIMULI THAT WOULD TEND TO DIRECT AND LIMIT THE DIVERSITY OF POSSIBLE RESPONSES. EXAMPLES: HOLDING THE CAR UP TO ONE'S FACE WHILE LOOKING THROUGH THE WINDOWS OF THE CAR AND PRETENDING THAT THE WINDOWS ARE A MAGNIFYING GLASS; STANDING ON THE TOY AND USING IT AS A SKATE.
PLAY II (NON-CREATIVE PLAY)	CHECK IF THE CHILD IS IN CONTACT WITH THE TOY AND IS DISPLAYING BEHAVIOR THAT IS CONCURRENT WITH THE TOY'S STATED REAL COUNTERPART. EXAMPLES: GRASPING THE CAR WHILE MOVING IT ALONG THE FLOOR SURFACE VIA THE FOUR WHEELS; PRETENDING TO FLY A TOY AIRPLANE AROUND THE ROOM.
NO-ACTIVITY	CHECK TO NOTE AN ENTIRE INTERVAL IN WHICH NO INTER-ACTIONS (I.E., PLAY, EXAMINATION, TACTUAL, OR DESTRUCTION) WITH THE TOY TAKE PLACE.
DETAILED EXAMINATION	CHECK IF THE CHILD HOLDS THE TOY 12" OR LESS AWAY FROM HIS/HER FACE WHILE GIVING VISUAL REGARD TO IT.
GENERAL EXAMINATION	CHECK IF THE CHILD HOLDS THE TOY MORE THAN 12" FROM HIS/HER FACE WHILE GIVING VISUAL REGARD TO IT.
TACTUAL CONTACT	CHECK IF THE CHILD ONLY HAS TACTUAL CONTACT WITH THE TOY AND INTERACTS WITH IT IN NO OTHER WAY (I.E., PLAY, EXAMINATION, OR DESTRUCTION).
VERBALIZATION	CHECK IF THE CHILD DISPLAYS ANY VOCAL BEHAVIOR OTHER THAN LAUGHTER.
LAUGHTER	CHECK IF THE CHILD LAUGHS AUDIBLY.
DESTRUCTION	CHECK IF THE CHILD ENGAGES IN DESTRUCTIVE ACTION TOWARDS THE TOY.

TABLE 2
MEAN PERCENTAGES FOR ACTIVITIES

ACTIVITIES	ALL SESSIONS	1ST HALF	2ND HALF	ALL SESSIONS	1ST HALF	2ND HALF
CREATIVE PLAY	1.0 ^{ab}	1.5 ^{cd2}	0.4 ^{cd2}	12.2 ^{ab}	14.2 ^{cd1d2}	10.2 ^{cd1d2}
NON-CREATIVE PLAY	95.4 ^{ab}	94.3 ^{cd1d2}	96.6 ^{cd1d2}	80.4 ^{ab}	70.0 ^{cd1d2}	91.0 ^{cd1d2}
NO ACTIVITY	1.4	1.8	0.9	11.2	19.7	2.6
DETAILED EXAMINATION	33.6	25.4 ^b	41.8 ^b	23.6	13.1 ^b	34.1 ^b
GENERAL EXAMINATION	40.1	28.9 ^b	51.2 ^b	33.4	23.5 ^b	43.3 ^b
TACTUAL CONTACT	0.7	0.0	1.5	3.6	2.0	5.2
VERBALIZATION	57.1	46.1 ^{d1}	68.1 ^{d1}	62.4	49.7 ^{d1}	75.1 ^{d1}
LAUGHTER	0.4	0.0	0.7	0.2	0.2	0.2
DESTRUCTION	1.2	0.2	2.1	2.5	1.5	3.5

^a Significant differences across conditions

^b Significant differences within conditions across play

^c Significant differences by halves across conditions

^{d1} Significant differences by halves within conditions

^{d2} Significant differences by halves within conditions across play

